

RF-230

Attorney Docket No.: HAR65 032  
Application Serial No.: 10/694,082  
Amendment dated 15 February 2007

**REMARKS**

Claims 1-30 are pending with entry of this Response.

Claims 1-2 and 4-30 stand rejected.

Applicant acknowledges the indicated allowability of claim 3.

**Information Disclosure Statement**

In accordance with the Examiner's request, Applicant has submitted another copy of the originally filed Information Disclosure Statement on a form PTO-1449 as Exhibit A attached hereto, and respectfully requests that the Examiner consider the previously submitted reference and submit a signed and initialed copy in subsequent correspondence.

**Rejection under 35 U.S.C. § 103(a)**

On pages 2-5 of the Office Action, the Examiner improperly rejects claims 1-2 and 4-30 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,944,206 to Dent ("Dent") in view of U.S. Publication No. 2003/0128656 to Scarpa ("Scarpa"). The Examiner appears to be misreading and misapplying the cited references and thus has failed to provide a *prima facie* case of obviousness. Withdrawal of the rejection under § 103(a) is hereby requested.

In order for the Examiner to establish a *prima facie* case for obviousness, three (3)

criteria must be met. First, there must be some suggestion or motivation, either in the cited prior art references or in the knowledge generally available to those of ordinary skill in the art, to modify the primary reference as the Examiner proposes. Second, there must be a reasonable expectation of success in connection with the Examiner's proposed combination of the references. Third, the prior art references must disclose or suggest all of the claimed limitations. *See* MPEP 2143.

In *KSR Int'l Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. Apr. 30, 2007), the Supreme Court did not reject the use of "teaching, suggestion or motivation" as a factor in the obviousness analysis required by the Patent Office. Rather, the Supreme Court stated that in supporting a rejection under 35 U.S.C. § 103(a), the **analysis should be explicit** and should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *KSR*, slip op. at 14. The Examiner has failed to establish a *prima facie* case for obviousness because the Examiner failed to satisfy his burden of showing that the prior art discloses or suggests all of the claimed limitations of claims 1-2 and 4-30 under 35 U.S.C. § 103(a) and/or under the guidelines provided by the Supreme Court in *KSR*; and, as such, failed to satisfy his burden of showing that there is a suggestion or motivation to one of ordinary skill in the art to modify the primary reference as the Examiner proposes.

Claim 1 recites, *inter alia*:

converting the constant envelope continuous phase modulation waveform into a non-constant envelope continuous phase modulation waveform thereby improving the bandwidth of the signal,  
wherein the step of converting includes interpolation of a path between constellation points along a chord connecting successive constellation points.

However, Dent and Scarpa, alone or in combination, do not disclose all of the features recited in claim 1. For example, the Examiner asserts that block 59, FIG. 2B (prior art) of Dent discloses: converting the constant envelope continuous phase modulation waveform into a non-constant envelope continuous phase modulation waveform, as recited in claim 1. This is incorrect. Rather, Dent discloses coding information for transmission in a digital communications medium. The information is coded to binary and then further coded to a known channel code. Modulating the information is performed via one of several well known techniques (e.g., QPSK, 8-PSK, 16QAM, M-QAM or M-PSK etc.). The signal is then filtered, provided as a continuous time waveform and converted to a carrier frequency signal in block 59 of FIG. 2B. The carrier frequency up-converting stage (block 59) is a well known component of the modulation process, and occurs prior to a signal transmission. The up-converting process represented by block 59, creates a signal having a specific frequency on which the original data signal would be modulated prior to signal transmission. This is, however,

not a disclosure in Dent of “converting the constant envelope continuous phase modulation waveform into a non-constant envelope continuous phase modulation waveform” as alleged by the Examiner. Thus, Dent, as the primary reference fails and the rejection of claim 1 under 35 U.S.C. § 103(a) should be withdrawn for at least this reason.

However, Scarpa fails to supplement the deficiencies of Dent. Applicant cannot find in the referenced paragraph by the Examiner, i.e., paragraph [0008], or in the entirety of Scarpa regarding a disclosure, teaching or suggestion of “wherein the step of converting includes interpolation of a path between constellation points along a chord connecting successive constellation points.”

Rather, Scarpa is generally directed to a method and apparatus for performing channel estimation and channel compensation in an orthogonal frequency division multiplexing (OFDM) system. Paragraph [0008], as referenced by the Examiner, discloses using pilot interpolation by implementing linear interpolation, cubic interpolation or by using a low pass filtering operation for interpolation. The low pass filtering operation provides gap filling for the signal as well as noise reduction. As illustrated in Figure 2 of Scarpa, each dot corresponds to an interpolated value at a carrier frequency, the valley points, such as 204 correspond to carriers with low channel noise,

and the peaks 202, 206 correspond to the carriers where the channel has relatively high noise. *See* paragraph [0008]. There is, however, no disclosure in paragraph [0008] regarding “interpolation of a path between constellation points along a chord connecting successive constellation points.” Rather, the pilot interpolation disclosed in paragraph [0008] is the performance of low pass filtering on received pilot data points. This low pass filtering interpolation fills in the data between pilot bins and also allows for noise reduction due to the filtering. However, this low pass filtering fails to teach “interpolation of a path between constellation points along a chord connecting successive constellation points.” *See* paragraph [0008].

The channel estimation of Scarpa is discussed in greater detail with reference to Figure 7. With reference to Figure 7, Scarpa discloses a 64 QAM constellation having 64 symbols and 7 corresponding rings. Scarpa then uses a reduced constellation method that determines which symbol to use for transmitting a set of data, while strategically selecting symbols in the constellation that would be less likely to experience interference. *See* paragraphs [0049] – [0050] and Figure 7. When signal noise is determined to be low, a full constellation decision directed update is utilized, i.e., the outermost ring 707. When signal noise is high, a reduced constellation decision update is utilized as exemplified by the inner rings 701, 702 and/or 706. This method, however, is not an

interpolation of a path between constellation points along a chord connecting successive constellation points, and it is clear that this teaching is not interpolating along a chord connecting successive constellation points.

As a result of the deficient teachings of Dent and Scarpa with regard to claim 1, the Examiner has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) and/or under the guidelines provided by the Supreme Court in *KSR*.

Reconsideration and withdrawal of the rejection of claim 1 is hereby solicited.

Regarding independent claims 7, 11, 16, 20 and 26-27, Applicant submits that for similar reasons as set forth above with regard to the allowability of claim 1 over the combined teachings of Dent and Scarpa, independent claims 7, 11, 16, 20 and 26-27 are also in condition for allowance. Reconsideration and withdrawal of the rejection of claims 7, 11, 16, 20 and 26-27 is respectfully requested.

Claims 2, 4-6; Claims 8-10, Claims 12-15; Claims 17-19; Claims 21-25 and Claims 28-30 are ultimately dependent upon independent claims 1, 7, 16, 20 and 27, respectively. Claims 1, 7, 16, 20 and 27 are in condition for allowance. Thus, the claims depending from independent claims 1, 7, 16, 20 and 27 are patentable at least by virtue of their dependence, without need to resort to the additional patentable limitations contained therein. Reconsideration and withdrawal of the rejection of claims 2, 4-6, 8-10, 12-15,

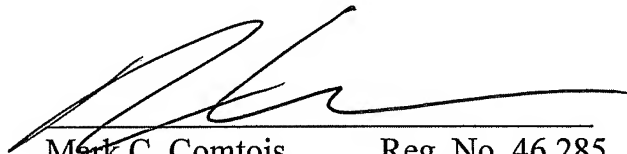
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17-19, 21-25 28-30 under 35 U.S.C. § 103(a) are hereby solicited.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to **Deposit Account No. 04-1679**.

Respectfully submitted,

  
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Date: May 7, 2007

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**EXHIBIT A**